

# Web Development 1

JAVA SERVLETS AND JDBC WITH MYSQL

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## How did you find the assignment?

The assignment was challenging for me, but fun and I learned a lot from it. The project was also confusing not the instruction but having multiple pages like having a folder to develop the project then building the app and then copy and paste the classes to the production folder and then putting the production folder to the tomcat webapp folder. Having multiple stages makes the project confusing, tedious and more error prone.

I am able to do a program similar to this it allows me to save data to a database, but I was using Springboot. Working on servlets made me understand how the “controller” works and the “cors” in springboot, it is the web.xml that is being configure if I create a url mapping through the controller.

I started the project slow, I was only thinking about the registering. I started with 4 classes which are User, Main, RegisterServlet and UserRepository. I was able to get the functions to work just connecting the HTML, Java and a database together. I started getting the username and password only. Then I worked on the HTML and found it not appealing for me as it is too plain, so I added a TailwindCSS to make things easier for me to styling it. Adding it does not add any complexity to the java code.

On the first week I think I focused too much on the UI or how the page looks, after I tested the connection through my own database server (Raspberry pi 5). I had errors like sql tables are not the same, multiple index from different folders that went to webapp even though I implemented a development space and a production folder.

On the second week I fully gave my attention to the core app. Which is the LoginServlet this class was the challenging part as I had to look through stackoverflow, geeksforgeeks, coderanch and w3 school. Some of the articles are pointing me to a JSP but I don't feel confident on implementing it on the project as I don't know how it works. However, I found a workaround which I found it much easier to implement and understand. Then I also implemented HTMLGenerator class which is just 2 methods that would create a HTML doc and function that would return a string.

Overall, I learned a lot from this project, because after I was introduced to tomcat, I started setting up my own homelab servers. Currently I have 4 servers working and would host this project to my frontend server which has a tomcat.

## Explain what functionality you got working.

- RegisterServlet - createUser(), databaseConnection()
  - Created these methods to be easy for me to change and refactor the codes on the future.
- LoginServlet – retrieveUser()
  - This method works but it took me a day to get this working with my previous projects from first and second year. This will return a null if the user is not found on the records and it will return the user object if found. Then I use this to do update or do a validation when doPost method.
- PlayerServlet - retrieveUser(), bannerError(), playerUpdateBalance()
  - retrieveUser() – works the same on the LoginServlet
  - bannerError() – Returns a string which contains a HTML tag then I add and pass this when creating a HTML page.
  - playerUpdateBalance() – this is an SQL update to make the data persist because when I didn't have this the balance gets resetted to 500. HOWEVER! There is a bug it takes signs on the input so if you put “-“ then spend it will add as two “-“ becomes a plus and vice versa on the “+”. Will try to fix this bug
- HTMLGenerator – creatingHTML(), playerHtmlFile()
  - creatingHTML() – is just a PrintWriter which takes the playerHtmlFile and create the doc and also takes the User Object, the response and also a banner message.
  - playerHTMLFile() – this is an interpolation or a String return and is a copy and paste of my HTML page template. I use String.format to be able to replace the characters to a string value.

# Explain what functionality you didn't get working - explain why

- RegisterServlet – redirectPage()
  - This function I created was my attempt to fix a bug from when a user is registered successfully, I want to redirect them to the loginpage or login.html file. I feel like I am missing something here I tried to implement a thread sleep for 2 seconds and then send them to the page. But I think I have an idea how to fix it.
  - I have fixed the issue I used a javascript to just delay 2 seconds then redirects them to the login page. Doing it with thread sleep is not working.
- Form buttons on each page
  - This is working but the bug is when you log in you enter credentials and password and supposedly you will click login to “work” but if you click the other button which is register it will log in as well, but it supposed to redirect the user to another page.
  - I changed the button to an anchor tag but still does the same then I found out that it is registered as a click event on the form. The button and the anchor tag are inside the form, so it gets the click event then proceeds to the action.
  - The only way to avoid this issue is move the anchor tag out of the form which is doable to implement but I found the issue late when I was letting someone to test it for me. So I won't have time to resolve the issue.
- Deployment Issue
  - I have it fully working but having multiple folders and then putting it to tomcat is error prone. What I mean is if you have 2 different files and you upload a different file its annoying because you will be looking at a different issue which is a waste of time when developing.
  - For some reason when I deployed this project to my homelab server it was working as intended but after a day it needs to restart the tomcat because of sql connection or the error is a timeout or a closed connection.
- SQL Database
  - This is working as intended but also the same issue on the deployment having multiple databases and if it was not setup properly it gets an error as it will either look for that specific column name, and as well as table names needs to be the same and the schema or database.
  - I implemented this on 3 database my PC, my laptop and my database server.
- PlayerServlet
  - Issue is with the inputs, I got some of it working but have lots of bugs in it.
  - When you put a +1 and click on add it works as intended but not my desired output.
  - When you put a “-“ it will trigger the if statement I created which is it will show a message that it is not allowed to input a sign and vice versa on the addition button.

# List all and any resources you used to assist you.

## References

### HTML

- <https://www.codeproject.com/articles/How-to-Dispose-Multiple-Submit-Buttons-on-a-Single#comments-section>
- <https://stackoverflow.com/questions/77800656/html-form-element-detecting-which-html-submit-button-is-pressed>
- <https://coderanch.com/t/360896/java/detect-button-clicked-FORM-server>
- <https://www.geeksforgeeks.org/html/how-to-link-a-button-to-another-page-in-html/>

### JavaScript

- <https://www.geeksforgeeks.org/javascript/setTimeout-in-JavaScript/>
- [https://www.w3schools.com/jsref/event\\_onclick.asp](https://www.w3schools.com/jsref/event_onclick.asp)
- [https://www.w3schools.com/jsref/prop\\_loc\\_href.asp](https://www.w3schools.com/jsref/prop_loc_href.asp)

### CSS

- <https://css-tricks.com/snippets/css/a-guide-to-flexbox/>
- <https://prismic.io/blog/css-text-animations>
- [https://www.w3schools.com/css/css3\\_transitions.asp](https://www.w3schools.com/css/css3_transitions.asp)
- <https://css-tricks.com/perfect-full-page-background-image/>
- [https://developer.mozilla.org/en-US/docs/Web/CSS/CSS\\_backgrounds\\_and\\_borders/Using\\_multiple\\_backgrounds](https://developer.mozilla.org/en-US/docs/Web/CSS/CSS_backgrounds_and_borders/Using_multiple_backgrounds)
- <https://tailwindflex.com/search?q=form>
- <https://cssgridgenerator.io/>

### JAVA Servlet

- <https://stackoverflow.com/questions/43559372/how-to-modify-web-xml-for-multiple-servlet>
- <https://www.geeksforgeeks.org/java/servlet-form-data/>
- <https://www.baeldung.com/servlet-redirect-forward>
- <https://www.geeksforgeeks.org/java/servlet-page-redirectation/>
- [https://www.w3schools.com/java/ref\\_math\\_abs.asp](https://www.w3schools.com/java/ref_math_abs.asp)
- <https://www.geeksforgeeks.org/java/java-program-to-check-if-a-given-integer-is-positive-or-negative/>
- <https://www.baeldung.com/java-check-integer-null-or-zero>

### SQL

- [https://www.w3schools.com/sql/sql\\_alter.asp](https://www.w3schools.com/sql/sql_alter.asp)
- <https://stackoverflow.com/questions/38948289/java-sql-sqlsyntaxerrorexception-unknown-column-in-field-list>

### Assets

- <https://free-game-assets.itch.io/free-sky-with-clouds-background-pixel-art-set>
- [https://www.freepik.com/search?format=search&last\\_filter=page&last\\_value=3&page=3&query=Pixel+art+space#uuid=95e5cc12-66c9-41a0-ae0a-263bf179d911](https://www.freepik.com/search?format=search&last_filter=page&last_value=3&page=3&query=Pixel+art+space#uuid=95e5cc12-66c9-41a0-ae0a-263bf179d911)
- [https://www.freepik.com/search?format=search&last\\_filter=page&last\\_value=2&page=2&query=pixel+art#uuid=0204346f-b06d-4a74-b1be-2b6c0cffca77](https://www.freepik.com/search?format=search&last_filter=page&last_value=2&page=2&query=pixel+art#uuid=0204346f-b06d-4a74-b1be-2b6c0cffca77)